STRATEGIC APPROACHES TO COMMUNITY SAFETY INITIATIVE (SACSI): Enhancing the Analytic Capacity of a Local Problem-Solving Effort

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INTRODUCTION

The U.S. Department of Justice (DOJ) has developed and is piloting the Strategic Approaches to Community Safety Initiative (SACSI) as part of a continuing effort to reduce crime in communities. SACSI promotes multiagency collaboration to data-driven problem solving. This document focuses on one of four major components of SACSI, the development of communities= analytic capacity through enhancement of their technology infrastructure. Because the project is ongoing, this document is meant to provide initial documentation of the initiative=s early progress. Section 1 describes the vision behind the initiative and its implementation steps, section 2 highlights the challenges, and section 3 discusses what has been learned.

SECTION 1: STRATEGIC VISION OF THE INITIATIVE

Pilot Testing in Five Cities

SACSI was launched in early March 1998 to test a specific framework for combating local crime problems (Solomon, 1997). Five cities were chosen to participate in the 2-year pilot project: Indianapolis, Indiana; Memphis, Tennessee; New Haven, Connecticut; Portland, Oregon; and Winston-Salem, North Carolina. These participants were selected from a pool of cities with the following characteristics:

- A population of more than 100,000,
- A violent crime rate either above the national average or on the rise,
- A police department with some degree of technological infrastructure,
- An innovative and forward-thinking mayor, police chief, and/or U.S. Attorney, and
- A history of, or capacity for, collaboration.

At its core, SACSI is an effort to Aincrease the capacity of U.S. Attorneys, working in partnership with Federal, State, and local criminal justice agencies and a research entity, to collaborate on

data collection and analysis and to design targeted strategies and interventions to prevent and reduce crime@ (Solomon, 1997). The SACSI framework has four major components:

- Formation of an interagency working group,
- Enhancement of a research and technology infrastructure,
- Use of a defined set of problem-solving process steps, and
- Transfer of what has been learned from the project to additional sites.

Each component will be described in more detail. Each site developed its program guided by the four components, but each city=s SACSI implementation process was site-specific.

Previous research in Boston, Minneapolis, and other jurisdictions has illustrated the importance of a multiagency, collaborative approach to problem solving (Kennedy, 1997). Based on these findings, SACSI emphasizes the importance of forming a strong interagency working group and detailing who should be a part of it. This core group should include representatives from law enforcement, the community, government, and a university. Members of this group identify a specific crime-related problem, develop creative methods to address the problem, and evaluate the initiative=s effectiveness and progress. Both law enforcement and non-law enforcement agencies help identify problems and formulate strategies to address them, a characteristic that makes SACSI unique. Key members of the core group include the U.S. Attorney, the project coordinator, and the research partner. The U.S. Attorney serves as a catalyst for the initiative. In other words, the U.S. Attorney is expected to convene the critical players, making sure everyone comes to the table ready to participate. The project coordinator is the hands-on manager of all facets of the process. The coordinator=s duties range from facilitating the working relationships among the participants to analyzing the data. Finally, the research partner contributes specific skills related to analyzing data, designing theory-driven strategies, and developing evaluation criteria.

The second SACSI component, enhancement of the analytic capacity, reflects the importance of access to data and the ability to synthesize it into knowledge. Both are required to fuel a data-driven approach to problem solving. First, needs and resources are analyzed at each site. Team members need direct access to a variety of data to make informed strategic decisions, and the creation of a data repository at each site enables this access. Once access is established, an easy-to-use interface between the data and the decisionmakers is required so the data can be used. Using data from different agencies is difficult because often the data does not contain a common identifier necessary to link files. Location is a key variable in such a multiagency crime fighting effort because it can act as the common denominator among the various individual databases. The use of geographic information systems (GIS) is required to take advantage of location and provide analytic capacity that includes spatial analysis. Beyond simply creating a project-focused GIS, this project attempts to build analytic capacity at each pilot site so the SACSI process can be replicated to tackle subsequent problems.

A problem-solving approach to crime is another key component of the initiative. Core team members are encouraged to use a seven-step approach:

- Identify the problem,
- Analyze the problem,
- Identify trends, patterns, and opportunities for intervention,
- Design the strategy,
- Implement the intervention,
- Evaluate the intervention, and
- Adjust the intervention.

Each step requires both access to accurate and timely data and the ability to analyze those data.

The final conceptual component of SACSI consists of a commitment to systematically record the challenges, successes, and failures of the process. The lessons learned from implementing this initiative in five cities are shared through formal information dissemination mechanisms and informal technical assistance. This document is the first in a series intended to communicate what has been done so far and what has been learned. Because the project is ongoing, this document is a preliminary rather than a final evaluation.

Enhancing the Analytic Capacity

The information systems portion of the initiative began in early April 1998 with the goal of enhancing the analytic capacity of the five SACSI sites to provide the basis for a problem-solving approach to crime. In keeping with the organic nature of SACSI, the concept of Aenhancing the technology@ was refined until it was distilled into three major objectives: (1) enable data access, (2) allow access by all team members, and (3) increase the spatial analytic capacity of the site. This portion of SACSI was directed by staff at NIJ=s Crime Mapping Research Center (CMRC).

Increase access to data. To support the multiagency, collaborative approach advocated by SACSI, participating agencies need to have access to both their own data and other agencies= data. Agencies outside the criminal justice system are included in the effort, so access to both traditional criminal justice data and non-criminal justice-related data is necessary. The data also have to be accessible from each agency=s locale rather than requiring personnel to make a trip to a central location. However, all data sharing is subject to the constraints of both legal and customary confidentiality regulations.

Increase usefulness of data. Beyond access, initiative participants also need an easy-to-use method for analyzing the data. Typically, there is an abundance of raw data in the field of criminal justice. However, tremendous hurdles exist for accessing those data and then turning them into knowledge. The initiative aimed to give all participants easy access to useful data. It was critical that the information system developed be easy to use so that all team members could

conduct their own data analyses. Another important characteristic of the system was that project participants could use it with a minimum of specialized training.

Use GIS to enhance data. The third goal was to harness the tremendous power of geographic information systems to enable SACSI participants to both visualize and analyze spatial data. GIS combines spatial and tabular analysis techniques with the additional advantage of allowing the relationships among data stored in different files to be visualized. The added value of using a GIS is the ability to use location. The real-world coordinates stored within a GIS enable data to be mapped and relationships between events or locations to be displayed and analyzed. This capability allows one type of data (e.g., street robberies) and relationships between datasets (e.g., street robberies and drug markets) to be visualized. Additionally, a GIS enables participants to examine patterns and trends spatially and temporally.

In addition to the overall goal of enhancing the analytic capacity of the sites, two principles guided the implementation. The first concerned developing a system that reflected user needs and Afit@ each site. The second required that the new information system build on existing efforts and incorporate the software (both database and GIS) already in use at the site. Consequently, each site=s version of the Community Safety Information System (CSIS) was different because it built on resources already in place and was driven by user-defined preferences. The comprehensive and well-constructed needs analysis procedure used in each site ensured that these two principles were met. A budget line of $1 million was allocated for external consulting services to complete this component of the initiative. NIJ also contributed significant staff and travel funds.

The next section discusses how the technology portion of SACSI was implemented. Implementation involved the translation of the general goals and guidelines outlined in the previous sections into specific strategies, boundaries, and measures of success. There were two major phases in each site: needs analysis and implementation. Whenever possible, dates are included to document the fluid nature of project timelines and more accurately portray the organic nature of the project.

SECTION 2: NEEDS ANALYSIS PHASE

To meet the goals and principles outlined above, NIJ began by conducting a needs analysis at each site. DOJ contracted with Dr. Hugh Calkins of the State University of New York at Buffalo, who offered guidance on conducting a needs analysis. Dr. Calkins is an expert on local government needs analyses and has written manuals on the subject. The assessment team employed a systematic methodology that has been used previously in numerous successful GIS-related user needs analyses (Calkins, 1996). This methodology was instituted to ensure the accurate characterization and documentation of user needs. The time-consuming needs analysis process was critical to developing systems to meet the needs of the project participants. Additionally, DOJ/CMRC hired INDUS Corporation to conduct the needs analysis at two sites, assist with one site, and provide support at all five sites. Dr. Calkins trained both CMRC and

INDUS staff in his methodology. Use of the same methodology by both teams resulted in the consistent analyses across all five sites.

The assessment team expected to gain a good understanding of each site-s needs and current information system infrastructure from the analysis. In addition to gathering information about each site, the team hoped to identify common types of analysis requested by one or more sites. Significant overlap in analyses would reduce development costs because a routine developed at one site could be reused at other sites. For example, if all the sites wanted the capability to query crimes that happened within a specific distance of a location, the team could program the routine once and integrate it into five different CSIS applications. The needs analysis also would provide the basic knowledge for developing a successful implementation strategy for all five sites in the shortest time possible. Based on conversations with the contractor and the timeline for the overall project, the team set an aggressive December 1998 target date for implementation at all five sites. CMRC staff recognized the importance of accurate and timely data to the planning process and worked hard to implement the five systems in the minimum time possible.

The plan was to complete the user needs analyses at all five sites by July and then begin implementation at a pilot site. The team estimated the pilot site implementation would take about 2 months and utilize a team of INDUS personnel. The pilot site approach was designed as a learning experience that would uncover underlying problems, thus speeding up subsequent implementations. When the pilot ended, the assessment team would split into two teams and add members. The final four sites would begin concurrent implementation in October with each team conducting the implementation of two sites. While this was an optimistic timeline, the team hoped setting aggressive goals would maintain the high level of enthusiasm for the project among the sites.

Conducting a formal needs analysis not only provided information, it also functioned as an educational process and generated excitement about the project. As part of the interview process, participants were informed about GIS and how it could support their SACSI effort. Additionally, the interviewers often shared information with later interviewees about data sources that they gleaned during previous interviews, making the process one of information exchange as well as information gathering.

Enthusiasm generated during the needs analyses was maintained through the multistep approach used in SACSI. Steps followed in building the information system included:

$ Conducting the needs analysis itself.
$ Generating products documenting what was learned.
$ Reporting the results and draft recommendations to the core team and all participants.
$ Incorporating changes requested by the site and releasing a user needs analysis document.
$ Holding a kickoff meeting for the start of the implementation phase.
$ Holding additional meetings, as necessary, to define application functionality and facilitate communication among the contractor and local and Federal partners.

At each step, the purpose and the uniqueness of the project were emphasized. Each step is explained in detail in the next section.

Several important issues were addressed by the core team at each site before and during the needs analysis because they often involved time-consuming negotiations and interdepartmental cooperation. These preimplementation decisions consisted of identifying the host agency to house the system, a technical lead person, the members of a technical committee, and relevant data confidentiality issues. Each issue needed to be resolved before an effective implementation could take place.

Conducting the Needs Analysis

The first step in the user needs analysis was a systematic survey of the information and analytic capabilities users required to support the problem-solving process outlined in the initiative. A two-person team visited each city for 5 days to learn as much as possible about the needs of the users, data availability, hardware and software resources, and personnel resources. A series of interviews garnered information about users= questions and the products that would answer those questions. Interviewers also constructed an overview of processes and interactions at each site.

Several weeks prior to the site visit, the assessment team and the project coordinator worked together to identify and schedule appointments with as many individuals as possible. Decisions about who should be interviewed were part of a process that resulted in initially including all possible participants and then removing participants who were not part of the primary project thrust. (The process of identifying appropriate participants became a template for thinking about the scope of the whole initiative.) Many SACSI participants, at first surprised by the scope of the project, later became excited by it. To aid in this process, a packet of instructions was assembled by CMRC/INDUS and sent to each site. The packet included guidelines listing potential participants, maximum number of meetings per day, length of meetings, and other logistical details (see appendix A). It was suggested that interviews normally be scheduled to last approximately 1 hour. The general guidelines also requested that organizers group meetings by department and limit attendance to as few individuals per meeting as practical.

Throughout the discussions with participants, the team was careful to stress the local nature of the initiative. The team often stated there was no Aone size fits all@ solution and stressed the outcome of each needs analysis would depend totally on the resources and requirements in each city. The team also stressed the important role of local participants in validating the results of the needs analysis. Their input, or lack thereof, determined the extent to which the analysis accurately reflected the needs of the site.

After the site visit was completed, the development of the needs analysis products began. Three main products were generated from information supplied by the local interviewees: a functional application/tool list and descriptions, a master data list, and a matrix of applications/tools by data

needed. These products served the valuable function of documenting the information collected during the interviews. Each product built on the previous one to further describe and document the needs articulated during the interviews. The functional application/tool list named each tool requested by the interviewees and the name and organization of the requestor (see appendix B). A functional application was defined as a specific analysis or tool that was requested by one or more users. For instance, a request to be able to display crimes by type was a functional application or a tool to examine crime patterns. The assessment team evaluated each suggestion and grouped applications/tools that were similar in nature. A description of each application/tool provided a detailed textual explanation of each tool-s function and a list of data layers and items needed to support the tool (see appendix C).

After application descriptions were developed, a master data list was assembled from the mentioned data layers (see appendix D). The master data list detailed the data layers and the items in those layers needed to create the requested applications. At this point, the master data list simply represented the articulated desires of the interviewees. The next step was to determine which data layers and data items currently existed. A matrix of data by application was created to prioritize the system development efforts (see appendix E). Using this product, one could easily tell which data layers were used by applications most often and for which applications. These products are addressed in more detail in the data availability section of this document. The needs analysis for all five sites began in the last week of April 1998 and concluded at the end of September 1998.

The team planned two more visits to each site to build upon the excitement generated during the 5-day site visit and maintain a high level of Federal-local dialogue. The time between the initial site visit, during which the needs analysis was conducted, and the return meeting to verify those needs varied according to site but averaged about 2 months. For example, in Winston-Salem, the original needs analysis was conducted in late April 1998, and the second visit occurred in June 1998. During the second site visit, the results of the needs analysis were presented to all project participants. Approximately 2 weeks before the meeting, all participants whose suggestions were incorporated into applications/tools received a faxed copy of the updated application/tool descriptions. Participants were asked to comment on how well those tools reflected what they had requested and to point out any omissions or errors to be corrected before the meeting. During the site visit, each application/tool was discussed individually, and both questions and input from local participants were encouraged. Once a consensus on the application/tools descriptions was achieved, the team presented the general vision for an implementation strategy, and every attempt was made to generate feedback from the local participants. A circular room setup encouraged a workshop type atmosphere in which attendees were more likely to ask questions and participate in discussions.

The third onsite visit marked the beginning of the implementation phase. As noted earlier, completing all five sites before beginning implementation in the pilot site was critical to gaining an understanding of the degree of overlap in analyses requested across the five sites. The team called the third meeting the technical kickoff meeting and encouraged attendance by the technical

personnel responsible for data or information systems in the community. In both Winston-Salem and New Haven the team started the meeting with several short speeches by ranking officials (e.g., police chief, U.S. Attorney). Other officials were present at the meeting and lent support to the project by their attendance. It was evident that the presence of the technical team=s high-level personnel made an impression on the team members. Once again, the team recommended that the sites utilize a circular room setup to equalize participants and enhance discussion.

The technical kickoff meeting marked a significant milestone in the system development process. From this point onward the participation level required by the local sites in the development effort rose exponentially. After the introductory speeches, the CMRC/INDUS team presented the specific plan for system design. In both sites this involved outlining an intranet system with a central data repository and browser access. Specific choices of the database, programming, and GIS software were also discussed as well as hardware to house the data repository. Software choices were based upon software currently in use at the site under the assumption there were already information systems and professionals familiar with those products at the local level. By building on the knowledge base of the site, the team hoped to leverage the investment the site-level organizations had already made in both technology and personnel.

After discussing software and hardware issues, the team addressed another major component of implementation, the physical data model. During the needs analysis phase of the project, discussions focused on which data layers and functionality the application needed to contain to conduct the types of analysis SACSI members desired. Intense discussion about the datasets to be included was required at this meeting because it was at this point that the conceptual datasets, as articulated by interviewees, were replaced by the actual datasets. For example, Winston-Salem had requested that information on churches be included in their tool to analyze risk and protective factors. However, no accurate data layer existed with that information. The representative from the Winston-Salem Planning Department stepped in and offered to create a layer of churches and supply it to the SACSI effort. This process was repeated for each data layer identified in the needs assessment. By the end of the meeting, the team had a supplier for each existing data layer or the name of an individual who was willing to create it.

Functionality outlined in the applications/tools was also discussed to make sure it still met the needs of the project. Once the needs analyses at all five sites were completed, it was clear that the team could not provide all the applications/tools the sites had requested. Consequently, the team asked each site to pick the five applications/tools they believed were most critical to their SACSI activities. Each site picked a different set of priorities, although there were a few applications/tools common to all five sites. These five applications/tools were discussed extensively to ensure continued consensus within the group.

Finally, the importance of this meeting cannot be overemphasized since it literally kicked off the database and application development portions of the project. If buy-in could not be obtained from the data suppliers, the effort would likely falter. It also should be noted that the process documented here is just one way to approach a needs analysis/implementation effort. The needs

analysis/implementation process itself is a flexible one and additional meetings may be scheduled to maintain a high level of communication among partners.

Results of the Needs Analysis

During the site visits, members of the CMRC/INDUS team interviewed approximately 255 local participants representing 92 organizations from the five cities. This gave the team feedback from a wide variety of individuals and agencies, such as law enforcement, corrections, social services, and information technology. Because local input was essential to designing an information system that would meet the needs of the local individuals, the information-gathering section of the project seemed to be a huge success. There was some variation in the number of individuals interviewed at each site (see exhibit 1). Local site personnel arranged the interviews and determined the number and variety of organizations interviewed. There were instances in which agencies that needed to be included were Adiscovered@ during the process, but these interviews made up a small portion (5 to 10 percent) of the total interviews. Indianapolis had the greatest number of individuals interviewed but the least number of organizations. Portland had the greatest number of organizations represented.

Exhibit 1. Individual and Agencies Included in the Needs Analysis Interviews, by Site

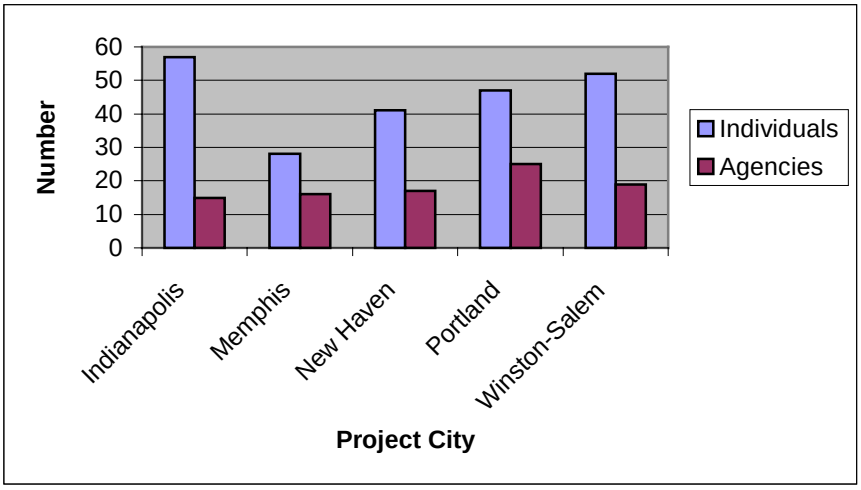
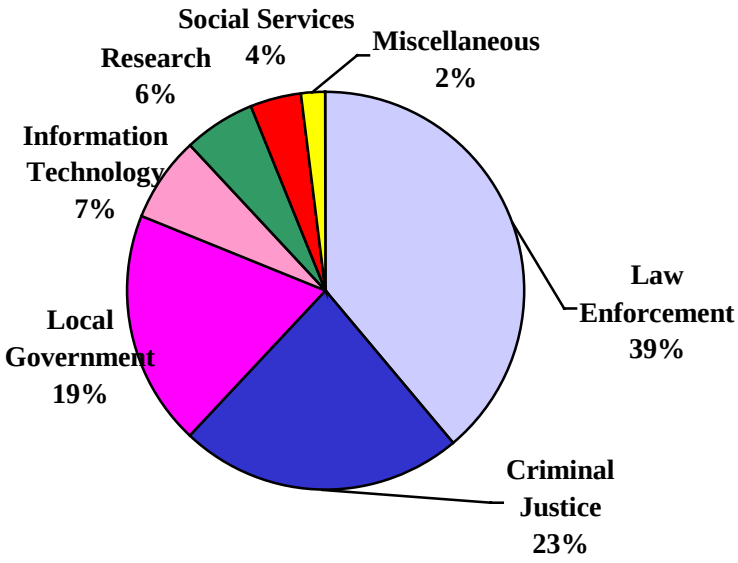


Exhibit 2 depicts the breakdown in categories of organizations. The fact that almost 60 percent of the individuals who were interviewed represented non-law enforcement agencies was a tribute to the vision of the initiative=s architects. Other criminal justice agencies accounted for 23 percent of all agencies represented. Taken together 62 percent of individuals represented agencies from the greater public safety arena, and 38 percent of participants were nontraditional partners. As stated earlier, the exercise of thinking about which agencies should be represented in a multiagency data-sharing and problem-solving approach led directly to the inclusion of many of these agencies in the initiative.

Exhibit 2. Organizations Represented in Needs Analysis, by Site



Approximately 133 applications (analytical tools) were requested across the five sites (see exhibit 3). There was significant overlap among those applications. For instance, every site requested some type of tool to analyze offense events by various attributes of the offense (e.g., time of day or type of offense). For ease of discussion, applications/tools were grouped into four main types based on the goal of the analysis: crime analysis, socioeconomic analysis, operations, and presentation (see exhibit 3). Standard GIS functionality such as pan, zoom, add layers, and identify were available in each application. More specific GIS functionality (e.g., select events within a certain distance) was embedded in each application as requested by the site.

Exhibit 3. Applications/Tools Identified Across All Five Sites

	Indianapolis	*Memphis*	*New Haven*	*Portland*	*Winston-Salem*
Crime Analysis	12	8	14	14	15
Socio-economic	1	3	5	5	10
Operations	7	10	7	5	9
Presentation	1	0	1	2	3
Base layer*	0	1	0	1	0
Total	21	21	27	27	37

*Total does not include base layer application because it is not truly a tool. Rather, the base layer application is a "place holder" for a specified collection of layers.

Applications/tools that focused on developing a better understanding of crime were grouped into the crime analysis category. These were further broken down into applications that examined an incident (crime or call for service) and those that focused on the person involved (suspect, victim, or known offender). Applications that enabled the examination of demographic shifts across several types of geographic areas (including neighborhoods and school districts) and consequently offered insights into the relationship among crime, demographics, and behavior were grouped under the socioeconomic category. Participants understood that identifying non-law enforcement data was important to SACSI because examining these connections was essential to developing collaborative prevention and intervention strategies. Using these tools, participants could model how shifts in income, unemployment, housing stability, housing tenure, and other community characteristics change in relation to crime rates. Another category of applications/tools consisted of operational applications that dealt with frontline issues. These applications were straightforward and provided a tool for frontline workers to obtain information quickly. For instance, recent activity maps allow an officer or core team member timely and easy access to information. Because of their cross-site applicability, operational applications seemed to offer the best opportunity for application across several sites. The presentation group consisted of applications that were developed primarily for use when interacting with the public. This interaction could be passive, as in the presentation of mapping analysis and the weekly incident reports for community groups, or it could be active, as in the case of providing public access via the Internet.

SECTION 3: IMPLEMENTATION PHASE

This section discusses the implementation phase of the Community Safety Information System (CSIS). Each decision made during the implementation phase is covered so readers understand both what actions were taken and why those particular decisions were made.

Before discussing those decisions, it is important to articulate the vision for CSIS. The team began to think of implementation in terms of creating a core application with basic GIS functionality and then customizing each site=s product to meet the functionality requested in the needs analysis. The core application would contain basic GIS functionality (e.g., pan, zoom, and add data). This approach is somewhat analogous to creating an operating system such as Microsoft Windows957, which allows the user all kinds of functionality (e.g., dragging, dropping, copying, pasting, adding and deleting programs). However, the user can then install specialized programs to accomplish specific tasks (e.g., word processing [WordPerfect7], file compression [WinZip7], and database management [Access7]). In the CSIS, users have the core application to add and remove data layers, zoom in and out, and identify features. Site-specific applications are added to provide analysis of offense events by their characteristics or examine the relationship between concentrations of probationers and parolees and crime events.

In discussing how the datasets would be accessed by a wide variety of participants, the team naturally thought of creating an Internet/intranet application. Because a major goal of SACSI was to provide data access to all the participants, an intranet/Internet application was an inexpensive method of doing that. Also, an Internet/intranet application is flexible enough to work with several types of databases. Thus, the application could be used even in sites where enhancing the technology takes the form of building on existing databases by providing a spatial analysis capability rather than creating a custom data repository. In short, with additional programming, CSIS could be installed Aon top of@ the existing database.

Global Decisions

Two major decisions had to be made early for the project to move forward: what type of contracting vehicle to use and whether one contractor should be chosen to serve all five sites or a separate contractors for each site. The first decision to be made concerned the type of contract and selection of a contractor to complete the implementation. Software development contracts are frequently initiated through a request for proposal (RFP), which is written by the agency paying for the system and outlines the vision behind the system as well as the system requirements.[1] Typically, an agency would generate an RFP, and potential contractors would respond by submitting a proposal that outlines how they would meet the requirements in the RFP. The contracting agency reviews all the proposals and chooses a vendor.[2] The entire cycle can take 6 months to 1 year to complete. Unfortunately, the team did not have that much time because SACSI was a 2-year demonstration project, and it had already started. The team needed a contracting device that could be put in place quickly. In the Federal Government, an interagency agreement requires less than 1 month to be set up because it allows an agency to Apiggyback@ on

an existing contract for services. This option was chosen for the SACSI information system development contract because of the short timeline within which the project was operating.

The next decision concerned the number of contractors to use. The question of whether to use one contractor for all five sites or a different contractor for each site had several considerations. The advantages of having one contractor responsible for all five sites revolved around the following factors. First, involvement in all five sites would provide a single contractor with the Abig picture.@ Insight gained from this big picture view of needs across sites should have translated into savings because the contractor could capitalize on duplication of functionality among sites and plan more efficiently. These savings could occur in programming since the duplication in functionality being requested across the five sites meant that programming code could be reused at several site.[3] Only the site-specific analytical tools would require unique programming code.

Regardless of the specific analytical tools chosen by each site, the core application contained the standard GIS functionality necessary to navigate and query data (e.g., pan, zoom, and identify). Implementation by a single company would mean the core application was only developed once rather than five times. Consequently, both the product received for the government=s investment and the benefit to each site would be maximized. As a result of having the big picture, one contractor also could schedule implementations to maximize staff contributions and minimize downtime. In addition, a single contractor could apply the knowledge gained from each new implementation to subsequent implementations.

Second, the use of one contractor would provide a consistent Alook and feel@ to the software. Each site would receive the same level of quality in programming and project management. Third, from a project administration point of view, a multisite project should be easier to manage with one contractor than with five different contractors who may have five different visions for implementation.

The scenario of using a different contract and contractor for each site also had some advantages. The ability to focus on one site and the implementation at that site was a plus. Additionally, each site=s implementation would have been independent of the other four sites, so each could be managed and evaluated separately. Thus, success at one site did not rely on success in another. This was especially important because each site had different needs. Another potential financial advantage stemmed from the use of separate contracts that would prevent any one site from spending more than its allotted portion of the budget.

While conducting the needs analysis, the team became aware that there was significant overlap in the requirements for analysis articulated by the sites. The team decided to contract with one company to complete the implementations in all five SACSI sites for two major reasons: to capitalize on the duplication in user requirements and to avoid the duplication of building five separate GIS front-ends. After a search of local companies, INDUS Corporation was chosen as the contractor because of its competitive rates, experience with other Federal criminal justice

agencies, and knowledge of SACSI sites gained during the needs analysis phase. An existing contract through the Civil Rights Division of U.S. DOJ was modified to accommodate the additional work. Because the budget was tight, the team planned to conduct concurrent implementations with heavy support from the local data providers and technical staff. INDUS hired a team of individuals to handle data modeling, data migration, database creation, and application programming.

Site Level Issues

Information from the needs analysis was used to frame several critical questions at the local level. One question revolved around the form of the technology enhancementCeither a stand-alone system or an add-on to an existing effort. Discussion centered on developing a system that could be institutionalized into a problem-solving framework and sustained after the pilot project endsCa major goal of the project. Another area of concern was how to allow as many users as possible to have access, given existing network infrastructure at each site.

Deciding how to implement the CSIS or another form of technology enhancement centered on several critical questions: Will CSIS be a stand-alone system or an enhancement to an existing system? If it is a stand-alone system, where will the server be located? If it is an enhancement, which existing system should be expanded? These questions were difficult to answer definitively, less from a technical standpoint than from their politically charged nature. Additionally, DOJ=s commitment to fit the CSIS into existing information systems rather than make the local sites adapt to CSIS also contributed to the challenge.

In addition to the decision about stand alone versus enhancement, there was also the question of access. Throughout the needs analysis phase of the project, the primary goal was to allow all participating agencies to have access to the system. (At least this was the goal among the core team members at each site and the DOJ partners.) After extensive conversations between NIJ and INDUS, the team decided to recommend an intranet solution as the most cost-effective method of developing such an open access system, which would allow users to access the system via a Web browser. No upgrades in hardware or software would be necessary. Contrast this strategy with installation of a desktop GIS that would cost approximately $1,000 for software, include yearly maintenance fees, and require a high-powered machine to run it. This expense would have been incurred for each individual who wanted to conduct an analysis via access from their desktop.

The pressing issue of who would take responsibility for the day-to-day operations of CSIS both during and after implementation remained. This individual, who would hold the title of technical coordinator, needed to be a full-time employee dedicated to the project who would download new information in a timely manner, incorporate additional functionality into the system, train new users, and operate and maintain the system. Additionally, the technical coordinator would act as the primary technical liaison for Federal, contract, and local personnel concerning GIS-related issues. This individual had to be someone with experience handling databases and operating a GIS. Any experience in the criminal justice arena would also be helpful. The DOJ

team agreed that the agency hosting the system should provide this full-time employee. The technical coordinator role was pivotal in this project because he or she was the central onsite person, assisting with implementation and helping incorporate the system into the fabric of the community.

Subsequent to the needs analysis, it became clear that no site had a preexisting system that could be immediately enhanced to meet the goals of the initiative. However, there were several systems that were either in the planning stages or under development that would be candidates for enhancement in early 1999 or 2000. Since the team planned to have CSIS implemented in all five sites by April 1999, only Portland=s Decision Support System for criminal onsite data was a possibility for enhancement. However, the team would not know if Portland=s system would be implemented on schedule until November or December of 1998. The decision was made to postpone decisions related to Portland=s implementation until then.

Timeline for CSIS

The preimplementation issues discussed earlier in this document were raised at the Portland five-site meeting in July 1998. The NIJ/INDUS team conducted a GIS update briefing and outlined the decisions that sites should make related to their GIS implementation. These decisions consisted of identifying the following items: (1) each site=s top five applications/tools, (2) a host agency to house the system, (3) a technical lead person, (4) members of a technical committee, and (5) data confidentiality issues. The implementation schedule was amended to have the pilot site begin in late August and the next two sites in December. Pilot site implementation was to be completed before the end of 1998. The final two sites would begin implementation in early 1999.

The Winston-Salem pilot site for the needs analysis had addressed most of the preimplementation issues; therefore, that city became the obvious candidate for the pilot implementation site. The team missed its August implementation goal because of unanticipated holdups both on the Federal and local sides of the equation. Federally, it took longer to get the contract with INDUS finalized and signed than originally planned. Locally, there were several major decisions regarding local contribution to the system and choice of applications/tools that took longer to resolve than anticipated (see the preimplementation decision discussion in the implementation section). The technical kickoff meeting was held in October 1998.

Despite the presentation in July, no other sites provided the answers to the preimplementation questions. So, near the end of September 1998, the NIJ/ INDUS implementation team sent out an implementation memo once again outlining the questions that needed to be answered before GIS implementation could begin (see Appendix F). Obtaining the answers to these questions was essential to scheduling the remaining implementations.

Pilot-Site Implementation

The pilot site technical kickoff meeting was held on October 7, 1998, 2 months behind the revised schedule. During this meeting, INDUS presented its plan for how the CSIS would be implemented. The plan was received enthusiastically. The plan outlined a vision of an intranet-based implementation that included an Oracle7 database residing on a server and a GIS engine/front-end application programmed using ESRI=s Internet Map Server7 and MapObjects/Visual Basic7. The database, GIS, and programming software were chosen because they were already in use in Winston-Salem. During the meeting, members of the technical team who were providing data decided on a common format for data files sent to INDUS and committed to a timeline for supplying the datasets.

Two main types of setbacks in the implementation occurred after October 1998: data-related problems and programming challenges related to the use of an intranet rather than a server-based application. Data-related problems centered on data format and quality issues and timeliness of data transfer to the contractor. Many agencies that wanted to participate in the data-sharing effort were hampered by their inability to export data from their proprietary/mainframe systems into more standard formats. Additional delays arose from the cutting edge nature of the programming effort. Difficulties arose getting the Oracle database software to work with the MapObjects spatial display and Visual Basic programming languages. All of these problems and challenges resulted in a greater level of effort than INDUS had originally anticipated. Consequently, a greater proportion of the total budget was spent on developing the pilot site application than expected. By the end of December (2 months into the implementation), INDUS was still converting data and working on the core application.

At the end of January 1999, INDUS forecast an installation in late February/early March. Installation was completed on March 15 with users training on March 17, 1999. Once the initial installation at the pilot site was accomplished, it became apparent there were significant disparities between the expectations of site-level personnel and the product delivered. Members of the local technical team expected a more complete product than was delivered. During the next several weeks discussions were held on how to enhance the product to meet the initiative=s needs. Although programming was essentially complete by late April, the team encountered a variety of problems in installing a final working version. By June, a working product was available and 6 hours of training for the team members was held in August 1999. The morning session covered the use of the Internet, how to download an updated Internet browser, and the basic functions of the application. The afternoon session was dedicated to more hands-on use of the software and demonstrations of how to use the application to answer questions.

Unfortunately, use of the system has not been institutionalized. A variety of problems are related to the application itself; for example, some queries do not return the correct data and certain functions were not included. Also, problems with data migration need to be solved by the site. An added challenge was the lack of resources on both the Federal and local levels to adequately address these issues. As of the end of December 1999, the pilot site did not have a working CSIS application populated with current data.

Second-Site Implementation

As the team approached the next implementation, the members addressed some of the issues that hampered the implementation in the pilot site. One issue was the critical need for a dedicated technical lead to be assigned to the project. The second siteCNew HavenChad some funding flexibility that the other sites did not, so they hired the Brodie Group, a local GIS consulting firm already working for the city. The Brodie Group served as the technical lead, providing system administration services and enhancements during implementation, and supported the project for a limited time after implementation. The technical kickoff meeting was held on March 11, 1999.

Because of the constellation of expertise and dedicated personnel available via the use of a GIS contracting firm, the NIJ/INDUS team anticipated the Brodie Group would play a more hands-on role in the development and implementation of the CSIS system than the technical lead had in the pilot site. However, this seemingly positive change in strategy did not materialize without its own complications, specifically the development of a competitive atmosphere between the two contractors (INDUS and Brodie Group). In an initiative of this magnitude, installation of an information system required cooperation, teamwork, and communication among all parties. In the future, significant consideration should be given to promoting teamwork among contracting agencies.

Based on the lessons learned from the pilot site, the team incorporated other changes into the New Haven implementation strategy. As mentioned earlier, in Winston-Salem the team encountered difficulties with obtaining some of the datasets from the pilot site data providers. Basically, after the technical kickoff meeting, INDUS compiled a spreadsheet identifying data contributor responsibilities and detailed information about the various datasets, which were to be integrated into the system. INDUS then waited for the data to arrive. When the datasets did not arrive by the agreed upon deadline or arrived but in a different format than agreed upon, INDUS began working with the technical lead at the pilot site to obtain the data. This sequence of events turned out to be frustrating on both ends.

To avoid a repeat of this situation in New Haven, the team repeatedly emphasized the importance of timely data transfer. An additional conference call was held with the site, INDUS, and NIJ, during which the spreadsheet detailing which datasets each agency had committed to provide was shared among all parties and buy-in from the data contributors was renewed. The team also reemphasized the timeline discussed during the technical kickoff meeting. This formal timeline contained specific cutoff dates by which each dataset would be provided if it was to be included in the application. A detailed schedule of data-related milestones was also part of the timeline. The incorporation of these changes to the implementation strategy reduced many of the delays experienced in Winston-Salem and greatly increased the accountability of the data contributors. Unfortunately, the emphasis on a published timeline to spur dataset transfer from local data providers to the contractor did not completely eliminate the problem of obtaining datasets in a timely manner.

Unexpectedly, the site added a number of datasets after the needs assessment was completed. In response to the site=s wish to include these additional datasets, the team created Adummy@ datasets that followed the same structure as the real dataset but contained only sample data. This strategy allowed the development of the product to continue but may have ramifications in the future if the actual dataset received does not match the anticipated structure.

The New Haven pilot site experienced another letdown due to a disparity between the site=s expectations and the delivered product. To address this disparity, the team added a meeting during which the site could view the product under development and comment on its functionality. The team did this easily in New Haven because INDUS could use the application developed in the pilot site as a starting point for discussing current and future functionality. This functionality meeting was held on May 20 and 21, 1999, and provided participants with the opportunity to view the application before it was delivered and review the types of queries, both GIS and tabular, that they could execute using CSIS. All participants agreed the meeting was successful and left them with a clear idea of the type of system that would be delivered. The meetings also provided a user manual consisting of written documentation that described the screens and the CSIS functionality. This users manual was created by INDUS to accompany the demonstration of functionality in New Haven but is being adapted to address the pilot-site version of CSIS and will be delivered to the pilot site upon its completion.

The beta version of the CSIS application was delivered in July 1999, approximately 4 months after the technical kickoff meeting. Also in July, the contract money for the CSIS application ran out. Unfortunately, due to a lack of funding and a series of scheduling conflicts, New Haven is still waiting for an operational and fully functional CSIS system. The team is currently addressing these problems and expects the CSIS application to be up and running by February 2000.[4]

Obviously, New Haven benefitted from the lessons the team learned during the pilot site implementation. While it has always been part of the strategy to streamline the process by incorporating lessons learned from each site with subsequent implementations, it should be noted that some of the changes in the team=s strategy brought about unexpected complications. Although the team believes this is still the right approach, adjustments in plans, tactics, and evolving strategies will always take their toll on a project.

SECTION 4: LESSONS LEARNED

At this point in the project, it is appropriate that the team identify and classify some of the challenges encountered and lessons learned thus far. SACSI continues to be envisioned as a test bed for ideas and practices, in which some of these innovations will be successful and others will fail. Under this model, setbacks have been considered valuable opportunities to identify better ways of doing business. The most important outcome has been to learn from them.

In keeping with this philosophy of learning through experience, this section outlines some of the lessons learned related to enhancing the technology in local communities. These comments address challenges encountered in implementing the conceptual architecture of SACSI and offer examples of specific lessons learned from the interaction with the five sites that will be transferable to subsequent efforts. Finally, SACSI was always intended as an experiment within a specific framework, and it is in this spirit that these observations are chronicled.

1. **Allow enough time for software development**.

$ Typical information system development takes 6 months to 1 year, depending on the complexity of the system. In SACSI the team asked the sites to identify their problems and develop strategies to address them before the tools they were supposed to use to accomplish those tasks were developed.

$ Simultaneous implementation of the strategic and information infrastructure portions of the project stimulated a competitive environment in which all of the sites sought to be the pilot site. This resulted in intense pressure being applied to the GIS/analytic portion of the project and created unrealistic expectations for participants. All information systems projects require a long timeline and careful planning both before and during implementation.

$ A critical opportunity was missed to educate the local research partners on how to use geographic data. Four of five research partners had little or no experience with the use of spatial analysis techniques. If CSIS had been up and running before the start of the problem identification phase, the CMRC could have offered an informal class to research partners on how to analyze data spatially to better inform problem-solving strategies.

$ Because the analytic component was not ready when the project began, site personnel utilized other resources to identify problems and answer questions. Site personnel have come to rely on these ad hoc methods because imperfect information that is time consuming to produce is better than no information at all. Also, they are comfortable with the level of effort required to produce the analysis using familiar tools. As a result, the effort to enhance the analytic capacity has become separate from the day-to-day business of SACSI and, at this point, almost ancillary.

2. **Dedicate a technical lead for at least the first 2 years.**

The GIS/analytic portion of the project provided money to support the completion of a needs analysis, programming of the interface, creation of a central database, and installation of the system. However, the technical lead position was not funded. This was extremely costly in the end because it turned out that the technical lead position was critical to the success of the initiative. Most sites were reluctant to fund a technical lead locally. In some cases local sites resisted spending local time and money because of ill-timed budget cycles or other information technology efforts underway. In other cases, resistance to participating involved a lack of understanding of how CSIS would be different and/or better than any other system they already had. There is no doubt that traditional local/Federal friction may have been the source of this confusion (i.e., Federal Government dictating what locals Ado or do not need@).

3. Manage expectations.

$ One of the best ways to ensure that expectations remain realistic is to maintain a high level of communication throughout the development process. While the implementation in the pilot site began with a high level of communication among the site, the Federal partner, and the contractor, that level was not sustained throughout the implementation. Programming of the application for the pilot site was largely completed from the descriptions in the needs assessment document. Those descriptions and the programming done to implement them should have been discussed with the site-level project personnel frequently during the development of the application. CMRC personnel learned from this experience and required additional meetings during the programming phase to ensure the situation did not recur.

$ Another factor that contributed, at least initially, to some unrealistic expectations was the needs analysis methodology used. In keeping with SACSI=s emphasis on promoting the development of a multiagency collaborative approach to problem solving, the needs analysis was designed to elicit information from a wide variety of organizations and to develop a plan for the staged development of the analytic capacityCin other words, to provide a blueprint for developing an information system that would support subsequent problem-solving efforts as well as the initial 2-year project. Unfortunately, this lent the process a certain Ablue-sky@ approach because the team included all applications/tools that were requested by a variety of potential users in the needs analysis. It was only after the sites verified the collection of applications/tools that they were told they would have to choose five to be programmed for the initial system.

The team always planned to prioritize the applications/tools based on their importance to the initiative. However, by not clearly communicating the possibility that only some of the applications/tools identified would be provided within the current budget, the approach inadvertently raised expectations that the system would contain all of the functionality identified by the participants. Starting comprehensively and then narrowing down to applications/tools that would be created for this specific project was supposed to provide the

sites with a document they could use to guide the development of their analytic capabilities after SACSI was completed.

$ Management of expectations involves educating potential users so they have a complete understanding of GIS functionality. Although all potential users were given a short orientation to GIS as part of the needs assessment interview, a more comprehensive introduction may have prevented some of the expanding scope of the project that occurred as site participants began to comprehend the capabilities of the CSIS application more fully. Although the team knew this was inevitable, the members were not prepared for the size of the jump in sophistication. More than once participants remarked, AIf I had known then what I know now, I would have asked for something different, or more, or in a different way.@ Throughout the process, the team constantly had to consider how much to educate and lead as opposed to how much to follow.

$ An essential element of managing expectations is clearly defining the goals of the project so all participants have a good understanding of what success will look like in real terms. Establishing concrete and measurable goals also makes it easier to evaluate the success of the effort.

4. Emphasize data sharing early and often.

$ Data sharing was not uniformly embraced among participants and sites. Although the Federal partners and some of the sites were comfortable with data sharing, all ran into difficulties when the actual data to be shared was defined and it was time for the information to be transferred to the contractor. In some cities, the problem became evident when agencies resisted sharing such information as calls for service and offenses outside the criminal justice arena. Agencies also resisted sharing data that had been financially expensive to collect. It seemed there was a line of demarcation between informal/piecemeal data sharing and formal/institutionalized data sharing. The first type of data sharing was utilized quite extensively with little or no opposition. The second was more unusual and raised confidentiality and ownership issues because it involved the institutionalization of data-sharing mechanisms.

$ Another aspect of data sharing concerned the question of who should be given access to the analytic system. When the time for implementation of the system arrived, the SACSI technical and strategic core teams voted to restrict access to only technical folks and a few decisionmakers. This was certainly not consistent with the vision of open access to project participants. In addition, if a true data-sharing environment was not to be fully implemented, then a network solution may have provided better performance than an intranet one.

5. Identify clear project leaders for each participating agency.

$ Collaborative efforts, by their nature, consist of a collection of participants, none of whom have authority over the other. This works well until a decision must be made; at that point someone must be recognized as the authority who will make the decision and take responsibility for the results. Identification of such a leader is especially critical when spending money or obtaining permission for pursuing a specific course of action.

$ In addition to the leader for the collaboration there also needs to be buy-in from all the participating agencies. The more levels this commitment to SACSI spans within each organization, the easier it is to gain cooperation from individuals in that organization.

6. Take into account technology efforts underway in participating agencies.

$ Information technology projects underway in participating agencies caused significant delays to the SACSI project in three of the five cities. Major information technology projects traditionally have long timelines and tend to fall behind schedule. This combination can stall efforts to build a collaborative system because the newer system must either use the old database structure and then be reprogramed later or the team must wait for the new data structure to be defined before proceeding with development.

$ Another problem the team encountered that should not be as much of a problem in future sites concerned the rush to replace systems before the year 2000. Never before have so many information systems been replaced in such a short time period.

7. Begin planning information system development long before the effort begins when soliciting contributions from other agencies.

$ A significant amount of time must be included in the budget cycles of both government and private sector agencies. However, contributions from participating agencies help cement previous verbal commitments to the collaborative effort.

$ Planning is needed so one or two agencies do not end up as the sole contributors to the development and maintenance of the system because the contributing agency or agencies usually will skew the goals of the system to more closely align with their goals rather than the goals of the group.

8. Standardize the format for input data during system development to prevent difficulties in system maintenance.

Although this seems like a straightforward issue, data were delivered to the contractor in a variety of formats and structures. Problems in this area raise serious issues about the level of effort required to maintain the system upon delivery. Each time an update is received from one of the nonstandard data sources, it must be manually processed before the automated conversion routines that add new data to the system are run.

9. Document programming code to enable future enhancements.

It is the responsibility of the CSIS project manager and the local technical lead to make sure code is adequately documented. Local sites have been told they will be given the source code and be able to enhance the product INDUS delivers. Realistically, enhancements at the local level will only be possible if the code is well documented.

10. AComponentize@ programming code and make it as generic as possible so it can read additional datasets easily.

Componentized code is written in Achunks.@ Each portion or chunk of code does a specific sequence of actions. Once written, these chunks of programming code can be plugged into other parts of the application. This saves time because the programmer does not have to rewrite code for frequently used sequences of actions.

11. Educate all participants in geographic data and spatial analysis techniques for analyzing problems and support operations.

This was an essential ingredient to the SACSI modelCtranslating research into practice and informing policy decisions with research. One strategy for educating SACSI participants was to ask a Achampion@ who actually used geographic data to solve problems (e.g., chief of police or some other strategic level individual) to speak or demonstrate his or her skills at a training session.

12. Follow up on the needs analysis by frequent and sustained oral and written communication between the site participants and the programming team.

$ Because of the problems encountered when expectations in Winston-Salem significantly differed from the product delivered, the team required the contractor to submit a functional requirements document in New Haven that detailed the functionality to be programmed into the application.

$ The team also held an additional onsite meeting with the contractor and the site participants. The sole purpose of this day-and-a-half meeting was to discuss the types of queries that site participants could enter using the application.

In sum, four major lessons learned stand out from the rest:

$ *Any project that depends upon developing an information infrastructure for decision support needs to allow time to develop the system before the work of the project begins.*

- *Expectations of everyone involved in the project must be managed through frequent communication and agreement on project goals and objectives.* The importance of clearly stated and universally understood project goals cannot be overemphasized.

- *The technical lead plays a pivotal role in the success of the information infrastructure development.*

- *Crafting a detailed description of goals and objectives and then using that document in a competitive vendor selection process is the best way to make sure that the investment made in the infrastructure results in a product that project participants can use.*

SECTION 5: SUMMARY

The pioneering approach of the Strategic Approaches to Community Safety Initiative has begun to take hold in other cities across the United States. Several local, State, and Federal organizations have begun to model SACSI strategies and embrace its ideology in their respective endeavors to prevent and reduce crime. The development, design, installation, and improvement of data analysis capabilities were vital to such collaborative, information-driven efforts. This document provided early and ongoing documentation of the steps taken toward building an infrastructure that would easily support such a data-driven approach to problem solving.

This document was intended as both a chronicle of the CSIS component of SACSI and as a blueprint for future efforts that seek similar goals and structure. While it was difficult to capture all nuances and levels of decisions inherent in such a comprehensive effort, the examples given of the dynamics between various parties and decisionmaking processes should be seriously considered. In fact, most of the challenges explained in this document will ring familiar in the ears of those who have participated in similar collaborative projects. It is true that many of these hurdles are inherent to a project of this nature, but the importance of this document lies in its focus on the specifics of an information system implementation to support a multiagency strategic effort.

Information is essential to understanding the dynamics of a multidimensional phenomenon such as crime. Access to this information is critical to collaborative efforts at reduction and prevention. While CSIS suffered some setbacks in the beginning of the SACSI process, it is close to being fully operational in two sites. The team believes CSIS offers a unique mechanism for data sharing among agencies and enables the data-driven strategy formulation required of such efforts. Subsequent documents will discuss the appropriateness of CSIS as a tool for achieving these goals and challenges related to adoption of CSIS by local SACSI groups.

NOTES

1. An RFP also can be written by a consultant hired by the agency to ensure that all necessary specifications are included.

2. The number of steps varies by agency. Check with your contracting office for details specific to your agency.

3. Of course, the amount of code that could be reused depended on the software configuration and functionality chosen.

4. Additional money was allocated and implementation was resumed in February.

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Appendix A: Site-Visit Preparation Letter

Preparing for GIS Analytic Needs Analysis Site Visit

The following information will help you plan for the upcoming site visit, which typically covers 5 days (as appropriate). Please feel free to contact Liz Groff at 202B305B3301 or Robert Stropky at 703B506B6700 if you have any questions.

We will provide you with the following templates:

- $ Interview Schedule Matrix
- $ Interview Notes, Directions, Contact Names, and Telephone Numbers
- $ Sample Letters of Introduction, one for interviewees and the other for high-level decisionmakers

Before the visit, it would be helpful if you:

- $ Adapt sample letters of introduction for your site and mail to appropriate persons (1 to 2 weeks before the site visit). There are two versions of the letter: one version is targeted to high-level decisionmakers, and the other is geared toward the individuals with whom we will actually be meeting.

- $ Include a copy of the draft paper outlining the Strategic Approaches To Community Safety Initiative to everyone who gets a letter.

Scheduling meetings (ASAP)

An ideal schedule description has the following characteristics:

- $ A list of the names of all the people who will be at each meeting. If it is known what their role in the project will be, please include that information.

- $ Ample travel time between meetings for travelers unfamiliar with your city.

- $ Written directions detailing how to get from one location to another.

- $ Phone number(s) for the individual(s) with whom we are scheduled to meet. These would be very helpful for two reasons. First, if we are delayed in arriving, we can telephone ahead to let them know. Second, having phone numbers on hand makes completing followup calls very straightforward.

- $ Some open time slots to allow for impromptu interviews.

No more than 3 to 4 meetings per day.

Order of meetings during the 5-day site visit

1. The first meeting should be with the project team members for 1.5 hours on Monday to:

$ Introduce ourselves.
$ Talk about the purpose and goals of the visit.
$ Discuss the methodology to be used.
$ Discuss the products and timeline for this part of the project.

2. The next set of meetings on Monday and Tuesday should allow us the opportunity to interview the project team members on an individual basis for about 1 hour per person. During these meetings we will ask the team members two basic questions:

$ What types of needs or uses would you have for this type of integrated system?
$ What data do you have that could be used in the system to answer your and/or others= related questions?

$ The following set of meetings should be with other potential contributors to the effort (e.g., if schools are not a core project team member, they may still be stakeholders that could assist in understanding a juvenile-related issue). Each of these should be scheduled for 1B1.5 hours and take place on Tuesday or Wednesday.

$ The final set of meetings will be with data and system providers and will vary with the problem each site is assessing. Each of these interviews would be about 1 hour in length and take place Wednesday through Friday. Those attending should include representatives from these local agencies:

$ GIS staff for county/city/police.
$ Planning department.
$ Housing department.

On Friday afternoon there will be a 2-hour site wrapup meeting with the project team. Scheduling time for this will vary, depending on flights out of town.

Appendix B: Sample List of Applications/Tools

Project-Related Application List from the Winston-Salem GIS Analytic Needs Analysis

Crime Analysis

1	Crime type by MO, Offender, time-of-day, and area	J. Farris M. Euliss
2	Crime type by environmental factors (kind of street lighting, abandoned houses/vehicles, nuisance abatement violations, substandard housing, etc.)	J. Farris L. Ruscher H. Craig
	Crime type by proximity to selected locations (convenience stores, schools, intersections, etc.)	J. Farris M. Euliss

Socioeconomic Analysis

Protective factors/community resources (e.g., churches, afterschool programs, counseling/ mentoring programs). This includes both public and private resources.	D. Clayton B. Cole L. Evans
Demographic analysis by geographic areas (e.g., school districts)	H. Swanders L. Berry

Operational

Recent activity status maps (last 7 hours, last shift, last 24 hours)	Y. Thomas
2 Clients served (e.g., Department of Social Services, Mental Health, School Social Workers)	L. Evans B. Cole
Community Watch groups and meeting places and times	G. Sweat J. Farris

Presentation

Weekly and incident reports for Community Watch groups	J. Farris H. Craig

Appendix C: Sample Application/Tool Description

Winston-Salem SACSI
Geographic Information System
Requirements Analysis

Application Identification #: C1
Application Name: Crime type by M.O. and time-of-day
Application Group: Crime analysis
Department: MIS, PD
Defined by: J. Farris, M. Euliss, G. Sweat, Sheriff-s Dept., L. Ruscher, R. Durant, R. Rogan

Purpose:

Map size: page

Data List:

Features	Spatial Object	Attributes
Street centerline	Line	Name, class, address ranges
Crime incidents	Point	Incident number, crime type, MO, time, date, address/location
Accidents	Point	Accident number, contributing cause, fatality, time, date, address/location
Vehicle citations	Point	Number, type, driver, home address, time, date, address/location
Open air drug market	Polygon	Name, type of drug, address/location

Prepared by: ERG Approved by: Date:

Appendix D: Sample Master Data List

Feature	Object	Attributes
Abandoned/boarded up houses	Point	Type, date, address/location
ABC permit holders	Point	Name, type, owner, address/location, violations
Accidents	Point	Accident number, contributing cause, fatality, time, date, address/location
Adult establishments	Point	Owner, name of business, type of license, address/location
Arrestees	Point	Name, charge, date, address, work address
Arrests	Point	ID, name, charge, date, time, location, crime type, MO, victim age, race, gender, type(s) of drugs, address of arrestee
Assessment neighborhood	Polygon	ID
ATF database	NG	Serial number, crime linked to
Calls for service	Point	ID, address/location, type, date/time, contact, status
Car dealerships	Point	Name, makes sold, average # of vehicles, address/location
Child fatalities	Point	Age, date/time, cause, address/location, child=s address
Churches	Point	Name, denomination, address, phone #, programs
Community map	Point	Name, address, program name, program description, geographic area
Community Watch area boundaries	Polygon	Name, contact name, contact address, contact phone number, police liaison
Community Watch meetings	Point	Group name, address of meeting, date/time, usual attendance, notes
Convenience stores	Point	Owner, name of business, address/location, type of license, hours of operation
Counties	Polygon	Name, id, state
County neighborhoods	Polygon	ID, name
Crime incidents	Point	Incident number, crime type, MO, time, date, address/location, status, suspect, victim
Crime victims	Point	Incident number, age of victim, suspect name, suspect description, victim home address
Day care	Point	Name, enrollment, address/location
Demographic characteristics	Polygon	Population, age distribution, race distribution, Hispanic origin, income distribution, educational attainment, poverty status, polygon ID (block, block group, tract, etc.)
FDZs	Polygon	ID
First line directory	Point	Name, address, program name, program description
First-time mothers	Point	Address, birth date
Foster/adoptive Families	Point	Name, address, telephone number, type, age of child, sex of child, name of child, age of parent(s)
Gang territories	Polygon	Gang name

Appendix E: Sample Matrix of Data by Application

Feature	c01	c02	c03	c04	c05	c06	c07	c08	c09
Abandoned/boarded up houses		X							
ABC permit holders			X						
Accidents	X								
Adult establishments			X						
Arrestees				X	X	X			
Arrests				X			X	X	X
Assessment neighborhood									
ATF database									X
Calls for service						X	X		
Car dealerships			X						
Child fatalities									
Churches									
Community map									
Community Watch area boundaries									
Community Watch meetings									
Convenience stores			X						
Counties								X	X
County neighborhoods									
Crime incidents	X	X	X	X	X	X	X	X	X
Crime victims									
Day care									
Demographic characteristics							X		
FDZs		X	X	X	X	X	X	X	X
First line directory									
First-time mothers									
Foster/adoptive families									
Gang territories									
Geographic reference									
Gun seizures									X
Gun shops									X
Hotels/motels			X						
Housing characteristics							X		
Housing code violations		X							
Housing projects									

Feature	c01	c02	c03	c04	c05	c06	c07	c08	c09
Incidents									
Juvenile drug use characteristics									
Known drug markets									
Liquor houses			X						
Major roads									
Mental health cases									
Neighborhood							X		
Neighborhood association									
Neighborhood assn boundaries									
Nightclubs			X						
Nuisance abatement violations		X							
Offenders									
Open-air drug markets	X		X						
Parcels									
Parolee/probationer				X	X	X			

Appendix F: Implementation Decisions Letter Sent to Sites

Memorandum

To: Natalie Davis and Judy Stewart, Indianapolis
Christopher Jones and Veronica Coleman, Memphis
Joe Hutchison and Steve Robinson, New Haven
Peter Ozanne and Kris Olson , Portland
Sylvia Oberle and Walter Holton, Winston-Salem

CC: Steve Edwards (NIJ), Amy Solomon (NIJ), Andra Tisi (NIJ), Nancy G.
LaVigne (NIJ)

From: Liz Groff, NIJ's Crime Mapping Research Center
Rob Stropky, INDUS Corporation

Date:: 01/16/01

Re: Next Steps in Implementation

Introduction

The technology project is proceeding on schedule. Four of the sites have had their return visit from the needs assessment team and we are finalizing the Needs Assessment reports. Implementation is beginning in Winston-Salem this month. The schedule for implementation at the remaining four sites will be determined upon receipt of the each sites implementation preparation package. The implementation package developed by each site represents significant decisions they have made concerning how the Community Safety Information System will be structured at their site. System implementation cannot begin without this information.

Implementation Preparation Package

The package consists of the following five items/tasks. We will need this information, in writing, from all five sites.

a) List of prioritized tools –

Because the budget will not support programming all the applications identified during the needs assessment, the applications must be prioritized. We are suggesting that the site choose the 15 applications that they feel are most critical to their problem area and then rank them 1 through 15. Please submit a list that shows the rank, name, and number of the application.

EXAMPLE:

Rank	Name	Number
1	Crime by type	CA-1

b) Host agency for system –

One of the most critical and politically charged decisions is where the server/system will be physically located and who will be responsible for maintaining it. This is especially critical because the agency that is taking responsibility for the system must also agree to provide a technical lead person. A paragraph naming the agency that has agreed to host the system and some description of where, within the organizational framework, it will be located will be sufficient.

c) Technical lead –

Also critical to the success of the implementation is the technical lead person. This individual's responsibilities parallel those of the project coordinator. They will be the liaison between the local and federal contingents and will be responsible for the administration of the system. We anticipate that this will require a full-time position until the system is fully implemented. Please provide the name, contact information, title and brief synopsis of the technical experience of the individual who will be the technical lead.

d) Technical committee members –

In keeping with the collaborative nature of this project, we are asking each site to assemble a technical committee. This will allow other City and County agencies to have some input into the process and will increase their level of interest/buy-in. Please submit a list of members

names, agencies and contact information. This group will also be a valuable technical resource during implementation.

e) Confidential data items research-
Efforts to determine confidentiality restraints on data items will be very important given the confidential nature of the information that will be included in the system. The implementation team will need to know which data items will carry restrictions and what types of restrictions apply to which individuals. The issue of who will have access to the system is also part of this section and any decisions that have been made regarding access must be included in the implementation package.

Please contact Liz or Rob with any questions that you have about the implementation package. We look forward to working with you on this.

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